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MY BRAIN MADE ME *NOT DO IT*: AN EMERGENTIST INTERPRETATION OF BENJAMIN LIBET

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1. INTRODUCTION

Since it became a discipline in 2002 (Safire, 2002), neuroethics has been characterised in two ways: "ethics of neuroscience" or "neuroscience of ethics" (Roskies, 2002: 21-22; Cortina, 2010: 131-133; 2011: 44). The former refers to the nature of the ethics applied to review the ethical practices that imply clinically treating the human brain. The latter –neuroscience of ethics– implies research into more transcendental philosophical notions of the human being –free will, personal identity, intention and control, emotion and reason relations– but from the brain functions viewpoint.

For some researchers, studying the brain by neurosciences allows us to talk about "neuroculture" (Mora, 2007; Frazzeto and Anker, 2009), which may help solve questions such as free will, desicion making, and even responsibility, among other elements inherent to human moral. Others, however, look at it from a more prudent viewpoint, and have indicated today's challenges that neurosciences find with social sciences –especially ethics, economy, education and politics– in an attempt to achieve true interdisciplinary dialogue (Cortina, 2012; Salles, 2013).

In line with this interdisciplinary dialogue tradition in neurosciences, the present work presents a brief review of the challenges that the advances made in the neuroethics field pose to free will. As part of this review,

we centre specifically on the critics of the reductionism neuroscience tradition, which basically takes B. Libet's experiments as a basis to deny human free will.

The deterministic reductionism that these positions contemplate denies interdisciplinary dialogue with philosophy. So it is necessary to seek another perspective to re-interpret Libet's experiments that does not nullify human freedom and allows an understanding with moral philosophy. Perhaps a stance of emergentism can allow Libet's proposals to be re-analysed, but beyond the reductionism tradition in which he has been conventionally placed. Thus our aim is to critically analyse the mistaken justifications that have led many neuroscientists to use Libet's experiments from a deterministic perspective to deny human freedom. This objective is carried out in several sections.

The first part presents the three main arguments that have been used to deny free will based on Libet's experiments. We particularly focus on the third one, which acknowledges that we are not free because our acts do not commence consciously. This work also offers certain counter-arguments which, when taken from philosophy, have been put forward about Libet's experiments and its subsequent deterministic interpretations.

The second part comprises two sections. In the first one, a new vision of these experiments based on emergentism is proposed. This is done by assessing non-conscious conditionings during the process of doing an act. In the second section, conscious veto is analysed as one of the key elements in Libet's experiments to defend that free will actually exists in human beings.

2. NEUROSCIENTIFIC DENIALS OF FREE WILL

The empirical methodology of Libet's experiments (Libet 1999; Libet et al., 1983; Libet et al., 2004), and the theoretical bases that he used to study the neural correlates of voluntary action, have been broadly discussed in recent years in the neuroscientific field (Pockett & Purdy, 2010; Roskies, 2010a; Mecacci & Haselager, 2015). From the philosophical viewpoint, Libet's experiments have very little to say about human free will, especially when moral philosophy has been generally understood as a basic condition for acting responsibly, and for wondering about the reasons behind our actions.

However, was it Libet's intention to actually demonstrate that free will does not exist, or to show that voluntary action begins before the conscious experience of the act itself, as indicated by some? (Gracia, 2013: 576; Schlegel et al., 2013; Mecacci & Haselager, 2015: 328). It is interesting to note that his experiments do not mention "choice", but mainly the "intention to act".

Some have answered the first of the above two questions with the first option. That is, a neuroscientific line exists which, through deterministic and reductionist discourse, has been based on these experiments to point out that human free will does not exist. Some such authors, e.g. P. Van Inwagen (1989), D. Wegner (2002), F. Rubia (2009) or M. Gazzaniga (2011), and others who have done more recent reconstructions of Libet's experiment (Soon et al., 2008), tend to offer three arguments for this:

a) Free will is a brain construction.
b) Free will is causally determined.
c) Free will begins unconsciously in our brain.

Regarding the first line of argument (a), some authors have defended the free will consideration as a brain construction (Churchland, 2002; Pinker, 1997). They agree that it is fiction that works and, therefore, it is necessarily socially-based fiction. And it works precisely because believing in free will allows people to think that we are responsible for our acts. Free will is a fictitious construction that allows us to create a social, moral and legal system, known as "willusionism" (Nahmias, 2011).

For some this hypothesis is insufficient from the neuroscientific viewpoint because, in order to achieve it, it is necessary to refer only to aspects of the human mind that reduce it to electrochemical brain functions (Lavazza & De Caro, 2010: 24-25). For others this hypothesis is not sufficient from the philosophical and social viewpoint because accepting fiction as the basis of structures such as moral, justice or social relations would not make any sense at all (Evers, 2010: 78).

With the second argument (b), some authors deny human free will because it is determined by our brain; in other words, by physiological structures – which has been termed as neurodeterminism. According to M. Gazzaniga, this is because the brain's conscious experience is experience that actually occurs after the fact, where the left hemisphere acts as the interpreter (Gazzaniga, 2011: 105-111). Even though brain determin-

ism can be understood from various perspectives (Baertschi & Mauron, 2011: 152), the fact that something is determined does not mean it is completely determined. So as we will see later, perhaps it would be better to talk about "conditioned" and not about "determined".

Neuroethics naturally relies on the study of cerebral bases, but these bases actually comprising foundations is quite a different matter. This difference has already been expressed by A. Cortina (2011: 94-96), whose notion was based on, among other aspects, the difference made by Spanish philosopher J. L. Aranguren between "moral as a structure" and "moral as content" (Aranguren, 1997: 58-66). Indeed neurosciences can study the human brain and contribute the bases or capacities that we, as human beings, have for actually behaving or develop our behaviour. But these bases or capacities cannot provide the foundations or content with which we fill them.

Argument three (c) is one of the basic themes of the present study. Some neuroscientists have argued that we are not free, not only because our actions are determined, but also because our behaviour is not caused consciously when an act begins. At this stage, we can point out that the most important relation is that between conscience and freedom.

Libet's experiments are widely known (Libet 1999; Libet et al. 1983), and here, therefore, we only need to recall his hypothesis. Libet believed that the awareness of a voluntary act was subsequent to the setting in motion of that action. Does awareness nevertheless play an important role in decision making? Is it an important or a determinant role? Before answering these questions, it may perhaps be interesting to ask when we began to consider the operativity of the unconscious human brain and its influence on decision making.

It was Hermann von Helmholtz who, at the end of the nineteenth century, established a true Copernican paradigm shift with regard to conscious awareness. The most common belief during that period was that consciousness was needed for moral judgment, so that it was very difficult to accept the "unconscious inference" suggested by Helmholtz (Evers, 2010: 97). However, the idea of an active unconscious did not disappear but instead, as many people know, was developed more extensively by Sigmund Freud, who broadened the framework of perception from which Helmholtz believed to operate uniquely. This idea continued to evolve until neuroscientists Hans Helmut Kornhuber and Lüder Deecke discovered, in 1965, an unconscious readiness potential to carry out an act. They called this *Bereitschaftspotential* (Kornhuber & Deecke, 1965),

which Libet later translated as *readiness potential*. This unconscious readiness potential showed that the conscious manifestation of a volitional act was unnecessary.

In 1977 during one of the first truly neurophilosophical dialogues, neuroscientist J. C. Eccles and philosopher K. Popper published a joint work entitled: *The Self and its Brain: an argument for interactionism*. This work defined their theory as dualist-interactionist (Popper & Eccles, 1977: 355). Libet was a disciple of Eccles, and therefore contributed to this dialogue somewhere between philosophy and neuroscience, which acknowledged mind-brain dualism and its emerging relation of the processes of the former on the physiological bases of the latter. However for Eccles, an act begins at the same time as the conscience of this act; in other words, the *self-conscious mind*, which comes over in his general theory of the mind-brain interaction (Eccles, 1994). This suggests that Libet's experiments intended to demonstrate that Eccles' theory was incorrect rather than focusing on denying free will (Gracia, 2013: 577). Some have acknowledged that Libet's real objective was to demonstrate that human will is free (Cortina, 2013: 18).

Our brief historic review allows us to perceive that the neuroscientific and philosophical background that led to Libet's experiments was dualist, and not non-monist, deterministic (Gracia, 2013: 558; Murillo & Giménez-Amaya, 2008). This, therefore, opens up a way to reconsider the original emergentist interpretation noted in Libet's experiments. However, others have viewed them differently, and have attempted to neuroscientifically colonise the philosophy field. Authors like Wegner, Dennet or Rubia have taken empiricist and neuroscientific monism, and believe they have found the bases of what philosophy has always addressed, human freedom. Their solution has unified mainly body-mind dualism.

For instance, when referring to Libet's experiments, Wegner warned that given the time distance between *RP* and the appearance of conscience, we have no control over our decisions. If we are not conscious of a decision at the precise time we make it, we do not completely control it. Actions begin because of our desires and beliefs but, consequently, we do this passively. Nonetheless, admitting that we are conscious requires active causal (not passive) activation through our desires and beliefs. So for Wegner, we are actually free if, and only if, we have active power to intervene in making our decision from the precise time at which our desires and beliefs begin to the very last microsecond before acting (Wegner, 2004: 650; Levy, 2007: 232-234).

In line with this argument, we may wonder from the neurobiological (and even educational) perspective whether human beings having an active causal influence as a result of their acts through desires and beliefs are actually of any interest. Personally, I consider that this would reduce our free will frame, and we would also take longer to perform action from the instant *RP* appears. If each time we make a decision or perform some action, the influence of our desires and beliefs would be active and not passive, the time between *RP* and the action would be longer.

The hypothesis about the conscious influence on mental mechanisms for them to become unconscious with time, and thus become habits, is a basic premise for any educational and therapeutic programme (Evers, 2010: 100). Indeed it is precisely the development of habits that enables vital energy to be saved and which shapes our character and its various dimensions and is, therefore, also a basic premise of ethics (Cortina, 2013: 36-42).

At this point we wonder about two things at least. First, why and how have Libet's reductionist interpretations been made that they deny human free will? Second, how can a re-interpretation be made which, if we bear in mind the neuroscientific dimension of the experiments, would not deny human freedom?

In an attempt to answer the first question, philosopher J. Habermas seems to recognise certain interpretation errors which may have led to this situation.

J. Habermas' position is philosophical and discursive, and begins with smooth non-scientific naturalism (Habermas, 2006: 161). In this way, Habermas considers that all that can be expressed as true statements is real. Yet this does not mean that all scientific statements made from experience exhaust reality. J. Habermas also expresses the idea that the heavy deterministic weight of B. Libet's experiments is not due to the author himself, but to subsequent attributions (Habermas, 2006: 162). If we bear in mind these considerations, the five criteria made by Habermas about Libet's experiments and its interpretations stand out:

1) Attribution error.
2) Epistemological error.
3) Methodological error.
4) Ontological error (or from ontological monism).
5) Discursive (or linguistic) error.

The attribution error (1) consists in, when it comes to justifying the denial of freedom, neuroscience having attributed the basic "self" role (psychological) to the brain (neurobiological) (Habermas, 2006: 160).

The epistemological error (2) refers to determinism of laws of nature. According to Habermas, determinism would not be a theory based on laws of nature alone, but rather a naturalist cosmovision based on a speculative interpretation of a series of typical knowledge about laws of nature (Habermas, 2006: 160), which would ultimately fall within epiphenomenalism.

The methodological error (3) refers to Libet's own experiment. Apart from the artificial creation of abstract situations of decisions being somewhat questionable, we ought not to forget that the participants were taught about the process of the experiment itself. So they would preferentially concentrate on planning action rather than on performing it –which was what was requested in the end– (Habermas, 2006: 162).

The ontological error (4), or ontological monism, would consist in a deterministic current posterior to Libet's experiments having unified causes and reasons to act as a single element. Such monism totally invalidates the subject's capacity to indict because if the decision process is naturalised by a single cause explanation, the agent would become demoted, which would thus eliminate his/her initiative (Habermas, 2006: 165, 167).

The linguistic error (5) would imply unifying, and thus confusing, two vocabularies that explain reality: one refers to observable causes, and the other to rational motives (Habermas, 2006: 173). For the purpose of adapting our species to a natural and social setting, human beings would impose two types of explanatory perspectives to the world, and would express them by the two above-mentioned vocabularies. One reductionist explanation based only on physiological "observable" conditionings would imply denying freedom, as we could only observe it, but not participate in it. For Habermas, the human being is not only an observer of natural reality, but is also an active participant of social reality, which it shares intersubjectively with other subjects. Neuroscientific reductionism would only help us as observers, but not as participants in this reality (Habermas, 2006: 176). Only the link of these two perspectives enables social cognition and moral conscience to develop. The active participant perspective that is discovered at the intersubjectivity level, which reciprocally recognises subjects as valid interlocutors, is that which brings the freedom experience to light (Cortina, 2013: 26).

Some conclusions may be drawn from what we have seen so far. Firstly, Libet intended to further demonstrate the influence of the non-conscious mechanisms of an action to refute J. Eccles' thesis. Secondly, denying human freedom by taking Libet's experiments as an example is based on interpretation errors. Thus in order to answer the second question above, and in order to make the re-interpretation that takes into account the neuroscientific position in studying free will, but does not nullify it, two things at least are required: one, assessing the weight of these non-conscious conditioning factors when determining whether freedom exists or not; two, assessing the weight of consciously interrupting the act (what Libet termed conscious veto). It should not be assessed in a reductionist fashion, but conversely, the emergentist position should be retaken.

3. A PHILOSOPHICAL RE-INTERPRETATION OF LIBET'S EXPERIMENT

3.1. ASSESSING NON-CONSCIOUS INFLUENCES IN DECISION MAKING

Libet's point of departure is that there is electrical activity before the acts that we consider voluntary, which he calls readiness potential (RP). The principal question that this neuroscientist asked was not about the free act but instead about the voluntary act. Furthermore, the question "Do we have free will?" that leads to Libet's 1999 article does not ask whether we have absolute liberty –freedom– but instead whether we have freedom of action – free will. The fact that Libet questions whether we have *free will* and not whether we have *freedom* means two things. First, Libet is not asking whether we as human beings possess absolute freedom but instead about our ability to select among certain possibilities at a particular moment, given that there is a certain conditioning. Second, Libet is aware that will and freedom are not always identified with each other; that is, that a voluntary act may not be a free act. That is to say free will is a condition for a voluntary act, but it does not shape it totally former part (Libet et al., 2004: 56; Gracia, 2013: 563; Evers, 2010: 100).

This is not new as the influence of non-conscious elements on decision making is a long-standing philosophical tradition. In his Book III, Nicomachean Ethics, Aristotle proposed a philosophical outline for choice in

which choice must not be confused with will. This is because will is appetitive and desiderative, but requires reflecting on the reason to become a choice. Choosing is neither desiring nor wanting. For Aristotle, good is desired and we can desire anything, but we can choose only what is within our reach (Aristotle, 2011: 42-43).

Following this line, in Aristotelian thought reinterpreted through Tomás de Aquino, the intellectivus appetitus has two parts, one appetitive and other one rational. Free will would affect only the rational part, distinguishing about different appetites and taking action. There are appetites that come to us helplessly, but behind them, we can choose. Therefore, the moment that free will appears is not at the beginning of the process of carrying out an action, but later, over the intellectual volitional appetite (Tomas de Aquino, 1964).

This observation seems to be congruent with the neuroscientific explanation. Because consciousness has its seat in the cerebral cortex, there are some functions –especially perceptive functions– that are initiated in the nervous system (NS) but are somewhat delayed in arriving at the cortex, thus giving rise to a small delay between what happens and what is perceived. Libet also argues that there should have been some difference between the beginning of brain activity to carry out a voluntary action and the time of the conscious intention to do so (Libet et al. 2004: 125).

Thus, what Libet wanted to show was that the voluntary act begins before it is consciously experienced. To do so, he needed a measure of the two most important phenomena of this process: readiness potential (RP) and conscious experience. Given that the consciousness of the intention to act (W) did not coincide with the beginning of the RP but instead occurs 350-400 ms later, Libet concludes that there is an intention to act prior to the awareness of the intention to act.

> The initiation of the freely voluntary act appears to begin in the brain unconsciously, well before the person consciously knows he wants to act! Is there any role for conscious will in the performance of a voluntary act? (...) To answer this it must be recognised the conscious will (W) does appear about 150 msec before the muscle is activated, even though it follows onset of the RP (Libet 1999: 51).

However, his explanation does not stop here, which would lead to a deterministic point of view of negation of freedom. In fact, Libet overcomes this determinism, adding, "An interval of 150 msec would allow

enough time in which the conscious function might affect the final outcome of the volitional process" (Libet, 1999: 51).

From these words, one can gather that Libet does not close the door to conscious voluntary control, which in the final analysis governs the action. Thus, as has been noted above, intention precedes the awareness of intention. However, this point has resulted in some authors arriving at an erroneous conclusion (in my view). It has been argued that because a free act must necessarily be conscious, free will does not exist: before we are aware of our intention to act, the decision has already been made.

In fact, this conclusion is a fallacy, principally for two reasons. First, according to Libet, what could be concluded from this would be only functional, not causal relationships, or else we would fall, as Gracia indicates, into a fallacy of the type *post hoc ergo propter hoc* (Gracia, 2013: 568). Second, one must note that Libet speaks of "intent to act", not of "choice", which are two very different things: «Human subjects became aware of intention to act 350-400 ms after RP starts» (Libet, 1999: 47). It is thus necessary, having gotten to this point, to clarify the distinction between intention and choice. Here we present the second of the epistemological errors in this debate.

The term "intention" comes from the Latin *intendere* or *tendere in*, that is, a tendency to carry out something. Tendencies are what often give rise to a process of choice. Of course, voluntary intentions may exist, but this is not always the case. Only when the *intentio* is rational can we speak of voluntary intention. In other words, voluntariness is a characteristic of intention, but an intention is not always voluntary (Gracia, 2013: 569). Intention constitutes the condition of the possibility of choice. Voluntary intention that may lead to choice can enable making a free choice from among several possibilities, but not absolutely.

Does this mean that humans do not possess free will? Or that free will is not a transcendent human condition? Of course not. Looking at Libet's thought from an emergentist standpoint, awareness or the W moment is not something new; instead, it emerges through the conjunction of the prior factors in the RP process and thus becomes a basic characteristic for the subject to decide freely.

In this way, free will does indeed exist. But what will these previous factors be? Possibilities of action offered to intelligence at all times. This is how some Spanish philosophers like X. Zubiri, and later D. Gracia, have understood it.

Zubiri's study also approaches the relation between brain activity and optional activity in an emerging sense. For this Spanish philosopher, impulses are non-specific, unfinished, in nature; that is, they are open to take care of reality (Zubiri, 1986: 533). For human beings to take care of reality, they have to choose, and there in the exercise of choosing lies their wilful nature. Intelligence appears by emerging from the biological structures of human beings, and the brain is the organ that performs this formalising task as hyperformalisation (Conill, 2015: 269).

As the first instant of a free act, impulses make up that through which the human being "is taken", which Zubiri names «ferences» (*ferencias)* (Zubiri, 1986: 533). Unlike what many neuroscientists have concluded from B. Libet's experiments, these ferences do not completely determine the act being finally achieved. Regarding these ferences, when selecting, human beings transform them into pre-ferences (*pre-ferencias)* because they decide which of them they face to take care of reality. In Zubiri's opinion, an option has three instants: act, determination and incorporation. Yet these instants cannot be inferred in Libet's experiment as subjects do not have enough real time to shift from ferences to preferences.

Our brain's non-specific neurofunctional activity is what makes us choose, but not to choose among infinitely possible entities, but according to the ferences in a given situation. So it is not a matter of neurofunctional activity acting intrinsically and exposing us to various extrinsic possibilites –we would be quite unable to prefer anything without brain activity– but it makes us choose between a specific and limited setting of ferences intrinsically (Zubiri, 1986: 534).

According to Zubiri, we note that brain activity establishes the optativity process. Yet the option process also determines the course of brain activity. So is it a twin process? Does this mean that force of will is applied to my brain, which makes me move a finger as in B. Libet's experiment? The answer is no in both cases. Indeed it is a single psycho-organic process. As opposed to Libet's reductionist interpretations, Zubiri believes that volition (willfulness) is a psycho-organic act that takes care of option, and thus covers the entire volitive-neuronal process (Zubiri, 1986: 536-537).

Yet what happens once a ference becomes a pre-ference? Would it be a matter of adding possibilities to accomplish an act? Not according to Zubiri. As we prefer certain possibilities to others, we face them to take care of reality. When we take care of reality, we use the properties that define one possibility, or several possibilities, of "being". Such usage is

integration, which is the purpose of a process: superior free human activity, which thus shapes human beings' substantiveness (Zubiri, 1986: 541).

Regarding J. Habermas' former criticism, and despite their different philosophical traditions, Habermas shares the human substantiveness thesis with Zubiri as an emerging single psycho-organic process that is arranged into two instants. For Habermas, the physiological component (the body) would be inherent to the subject him/herself and to decision making. As actional subjects or agents, human beings are identified with their body, which empowers and enables them to undertake action. While exercising their free will, only organic determination could never occur (since this is not an external element). Free will possesses natural conditioning factors, but it is also conditioned by reasons that pertain to the agent's subjective nature (Habermas, 2006: 168).

The line followed by D. Gracia is similar to that of Zubiri, especially in terms of the emergentist vision of Libet's experiments. Here we understand emergentism as the line taken by K. Popper and J. Eccles (1977), that is, all emerging processes maintain irreducibility and unpredictability characteristics, as well as the capacity to create new systemic properties (Stephan, 1992: 25-48). This is because the important point of emergentism is that it affirms the appearance of new systematic properties which, in human beings, are transcendental properties as they transcend to the "environment" typical of any animal species until it becomes a world (Gracia, 2013: 557).

By following an emergentist interpretation, the so-called "conscious mental state" is an emerging property of the physical brain, which is unyielding to purely neuronal processes, but is still related to them (Libet et al., 2004: 170). The "conscious mental state" is not only an emerging property, but conscious veto also is. As previously mentioned, a truly interdisciplinary re-interpretation of Libet's experiments (neuroscientific and philosophical) implies assessing conscious veto during decision-making processes.

3.2. ASSESSING CONSCIOUS VETO DURING DECISION MAKING

According to Libet, it could be the case that if there is awareness and ability for control of an action, the resulting act is marked by two paths: the achievement of the act or, instead, the annulment of the action. In any event, there is volitional control over the action (conscious and vol-

untary), that is, there exists the ability to choose. Clearly, here we discard psychopathological disorders in which the subject believes that he or she has control over his or her response, when in reality, that is not the case (Libet, 1999: 49). Indeed, Libet talked about the conscious veto in the following terms:

> Potentially available to the conscious function is the possibility of stopping or vetoing the final progress of the volitional process, so that no actual muscle action ensues. Conscious-will could thus affect the outcome of the volitional process even though the latter was initiated by unconscious cerebral process. Conscious-will might block or veto the process, so that no act occurs (Libet, 1999: 51-52).

The possibilities of action that Libet offers in his experiment are quite limited. The entire actional field can boil down to moving one's wrist, so both possibilities of action consist in accepting or denying this action. Such studied actions are expressed actions –overt actions– (Mele, 2013: 2) and, according to Libet, they are neutrally moral. So, what reasons are there for preferring to move one's wrist or for pressing a button on a timer?:

> They decided when to flex a wrist, when to press a key, or which of two buttons to press. In none of these studies was there any reason to prefer the decided upon options to similar alternative options – and vice versa (Mele, 2013: 5).

Evidently, finger movement can be used to activate a nuclear weapon or to fire a pistol, but this is not the case. Nonetheless, it is true that Libet made it quite clear that moral-type actions were beyond his experiment (Libet et al., 2004: 155; 1999: 47), or at least that is what he believed in principle.

It is true that free conscious and voluntary will exists but, in this case, the choice of moving one's wrist is not temporarily restricted to the time the experiment is done, but it is implicit when the subject takes part in the experiment. It has been previously stated that a decision has nothing to do with the moral level because, in this sense, it is trivial. Yet if we leave these details to one side, and accept that the experiment is actually about the *act now* dimension (Libet, 1999: 54), what is interesting about conscious veto is choice linked to the deliberation process.

One might think that the ability to veto implies a new voluntary act and thus a new RP process, so that it would not be possible to develop it in the 150 ms that the author gives for the veto (Libet et al. 2004: 147). However, if we continue to maintain Libet's emergentist perspective, we note that the veto is not another act distinct from the act already initiated; instead, it is the same act, with the veto being an emergent capacity of the conscious process that begins at W. Thus, the veto is inherent to every conscious human act; it is a part of it and consequently cannot be viewed as a new act (Libet 1999: 573).

However, how can Libet say that he is not referring in his experiment to ethical questions that require much more deliberation (Libet et al. 2004: 155; Libet 1999: 47) while giving an example of the veto situations in which the subject refrains from carrying out an action that is unethical and socially unacceptable?

> All of us, not just experimental subjects, have experienced our vetoing a spontaneous urge to perform some act. This often occurs when the urge to act involves some socially unacceptable consequence, like an urge to shout some obscenity at the professor (Libet, 1999: 52).

As can be inferred from these words, Libet does not consider processes of moral or social action in his experiments–here, the focus is on the "act now". Although Libet does consider these deliberative processes for explaining the conscious veto, he also explains that the veto has no unconscious origin. According to Libet, the conscious veto does not require an unconscious process that precedes it because the veto is a control function, which is something very different from being aware of acting (Libet, 1999: 52-53).

Thus, Libet leaves aside the contemplation or study of deliberation in his experiment; however, he does consider it in attempting to explain the veto. Is this a contradiction? The neuroscientist considers that deliberation is a process separate from that which he is studying, which in the final analysis would take place prior to the RP (Libet et al. 2004: 135; Levy, 2007: 54). However, from the emergentist perspective that we are using to study Libet, one could consider that deliberation begins before the RP but is not for that reason a separate process.

It is necessary to differentiate between "deliberation" (which is always conscious) and "conscious intention". Hence although conscience of intention always appears slightly after decision making starts, this is no

obstacle for free will (Shariff & Peterson, 2005: 205; Mele, 2013: 8; Roskies, 2010b).

Conscious veto is one of the best examples to observe voluntary conscious action. It also offers another great advantage: its vast importance in moral terms. This confers the conscious free will concept further significance. As the author explains: «The role of conscious free will be, then, not to initiate a voluntary act, but rather to control whether the act takes place» (Libet, 1999: 54). In this way, although our appetites unconsciously take over our mind, the main ethical point is whether we eventually accomplish them or not as an act. Given the importance of conscious veto as the ultimate barrier before accomplishing an act, this element becomes the frontier mechanism between the action thought and the experienced action. So morally, it becomes very important.

Some authors have even investigated if such conscious veto responds to a specific cortex area.

Studies by P. Haggard (2011), and P. Haggard and M. Heimer (1999) have shown that in experiments on conscious decision and inhibited conscious intention that use the potential of related events and functional magnetic resonance images, there is an activation of the prefrontal cortex in trials with inhibition that is not present in trials of conscious decision. Furthermore, there is a resulting activation of the insula, which is interpreted as being caused by the experience of frustration that accompanies moments of failure in the execution of a programmed action.

These same authors acknowledge the possibility that the brain contains a specific zone that manages control to consciously brake the unconscious impulse. For Brass and Haggard, a particular area of the dorsal mediofrontal cortex (dMFC) is associated with a type of self-control and also shows connectivity with areas of motor preparation. This could suggest that self-control, and in the final analysis Libet's conscious veto, is achieved through the modulation of areas of the brain that participate in motor preparation (Brass & Haggard, 2007; Kuhn et al., 2009; Sigiru et al. 2003).

Despite the possibility of there being a specific brain area dedicated to conscious veto or not, what the attempts made to date have attempted to explain is that the human being does not possess absolute freedom, but is conditioned by the typical circumstantial possibilities of action. Therefore, free will consists in choosing one of the possibilities offered to us, and this possibility is determined by the subject's preferences, feelings and appraisals, but not completely. Moreover, choosing a pos-

sibility of action implies not making other possible choices; in other words, we can rule them out and/or veto them to make a more suitable decision and to act accordingly.

Indeed, when the supply of action is broad, as it is in moral decisions –although it does not take place in this way in Libet's experiments– a process of deliberation is needed that, in accordance with our argument, begins before the RP. The result that this deliberation produces –before the act– is a veto of directly accepting any possibility offered that is inconsistent with our moral evaluation (Gracia, 2013: 577).

Consequently, the result of the moral action, taking into account Libet's experiments, does not refer so much to the first decision made after a deliberation process –a positive formulation– but instead to the final decision considered after discarding others that would not fit with our moral thinking from neural parameters – a negative formulation. This interpretation largely agrees with the line of thinking in the Hispanic tradition from which we started. The adjustment to circumstances of which Ortega y Gasset spoke, and which was taken up by Zubiri and Aranguren, among others, largely agrees with this reinterpretation of Libet's experiments. However, given an understanding of Libet's experiments from an emergentist position, as proposed here, it seems to be the case that the human brain understands free will less as the ability to select one action among those available at a particular moment than as the ability to choose not to perform some actions in favor of others that favor us and/or others. Volitional control and the possibility of cancelling an action induced by unconscious experience seem to be elements that, according to the experiments studied, assume great importance in human decision making. Furthermore, although awareness of intention always appears shortly after the beginning of a decision, that fact does not constitute an obstacle to free will (Mele 2013: 8; Shariff & Peterson 2005: 205).

In this sense, neuroethics can follow its own path, distancing itself from neural determinism and the belief that human free will is an illusion that is proposed by many neuroscientists. As a mediator and interdisciplinary science, neuroethics seems to confirm, like moral philosophy, that the human being possesses free will, which is not an illusion of the brain but instead an emergent element of our consciousness and our own neural nature. It is necessary, but it is not a fiction. However, free will seems to justify in a better way that in humans' moral decision making, the important elements are the reasons not to perform one or various

actions–that is, control over not carrying them out–instead of the reasons for performing an action. It may be that the brain makes the decision before we have an awareness of the action to be performed, but what accompanies us until the attainment of an act is the ability to veto it, as accounted for by Libet (Libet & Haggard, 2001).

4. CONCLUSIONS

Given the above, one could conclude first that human free will is a legal, social, moral and neural axiom that arises out of the interaction between mind and brain. It is therefore necessary to study mind and brain together, but not identifying them as a single element. Only if we consider its entire actional dimension it is possible to speak of responsibility, intentionality and voluntariness.

Second, free will is not a fiction, it is not even a fiction that functions. Our own neurobiology and our cognitive development do not allow us to believe in fictions that function for the sake of social life. In this sense, free will is more an emergent result of our brain than a construction by it, and thus, the fact that it is determined by some of its components that regulate previous unconscious experiences does not mean that it is completely determined.

Third, the fact that an act is initiated in an unconscious way does not prove that the brain is deceiving us; this conclusion is prompted by the relationship between the conscious and unconscious minds in the human brain. It may be that, as Libet notes, intention is initiated unconsciously, but the attainment of an act, that is, the final word on human action, is conscious. Furthermore, one must consider that the influence of conscious processes in the unconscious mind –and vice versa– is one of the basic premises of any educational system.

Fourth, the adoption of an emergentist position regarding the treatment and study of the human brain allows for greater interdisciplinarity with the social sciences, especially with ethics and education. In turn, an emergentist position enables us to abandon reductionist or determinist positions, understanding free will more as the ability to decide among various possibilities for action at a particular moment than as the complete absence of conditioning or absolute liberty.

Fifth, the reasons given by some neuroscientists for viewing Libet as a determinist who denies –through his experiments– that human beings

have free will, are insufficient. Returning to the analysis of Libet's experiments by adopting an emergentist point of view allows us to understand the conscious veto not as a new element but instead as a system with characteristics different from the neural processes that shape it –but that also cannot be explained without those processes– and that intervene in decision making. Thus, it leaves the door open for conscious and voluntary control until the act is completed.

At a minimum, the consideration of the emergentist implications of human free will provide a way of thinking about the authority of the human being as an agent in decision making and action. Furthermore, the emergentist perspective could help achieve a better relationship among the sciences that point to a common and interdisciplinary field, such as neuroethics. An understanding of emergentism in the human brain would certainly bring positions together because it would discard determinisms and reductionisms that can often cancel out dialogue with the social sciences (especially moral philosophy). This approach favors a greater approximation between moral philosophy and neuroscience so that they can conduct a critical and interdisciplinary dialogue.

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